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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,036	01/04/2002	Nicholas P. Wilt	MSFT-0742/177739.1	2352

41505 7590 08/24/2006	EXAMINER
WOODCOCK WASHBURN LLP (MICROSOFT CORPORATION) ONE LIBERTY PLACE - 46TH FLOOR PHILADELPHIA, PA 19103	BULLOCK JR, LEWIS ALEXANDER

ART UNIT	PAPER NUMBER
2195	

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/039,036	WILT ET AL.
	Examiner	Art Unit	
	Lewis A. Bullock, Jr.	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>appeal brief filed May 19, 2006</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22,27-49 and 52-74* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9,10,17-22,27-32,35,36,43-49,52-57,60,61 and 68-74* is/are rejected.

7)☒ Claim(s) *7,8,11-16,33,34,37-42,58,59 and 62-67* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

1.   In view of the appeal brief filed on May 19, 2006, PROSECUTION IS HEREBY

REOPENED. The non-final rejection set forth below.

To avoid abandonment of the application, appellant must exercise one of the

following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply

under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed

by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and

appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth

in 37 CFR 41.20 have been increased since they were previously paid, then appellant

must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by

signing below:

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

3.   Claims 21-23, 47-49 and 72-74 recite the limitation "the control data streams",

"the construction" and "the submission" in various instances of the cited claims. There

is insufficient antecedent basis for this limitation in the claim. Neither the control data

streams nor the construction was mentioned before the present instance and such

language does not particularly point out and distinctly claim the subject matter. The

examiner has interpreted the instance of "the submission" to refer to the transmitting.

However, to make the claims uniform, the same language or expression should be

used. Therefore, "the submission" should be "the transmission".

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1-6, 9, 18-21, 23, 27-32, 35, 44-47, 49, 52-57, 60, 67-72 and 74 are

rejected under 35 U.S.C. 102(e) as being anticipated by GARY (U.S. Patent Application

Publication 2001/0049753).

As to claims 1, 27 and 52, GARY teaches a method for controlling the

computational resources (DSP resources) of at least one coprocessor (DSP) in a host

computing system having a host processor (general purpose processor / host

processor), comprising: controlling the at least one coprocessor of the computing

system with commands (requests / commands) of command buffers (data buffers)

submitted to the at least one coprocessor by a host processor of the host computing

system (pg. 1, paragraph 0019; pg. 2, paragraph 0033-0040; pg. 3, paragraph 0056 –

page 4, paragraph 0064; pg. 4, paragraph 0067-0072); transmitting, by the at least one

coprocessor, data (data / response) back to the host computing system in response to

commands in at least one command buffer of the command buffers (pg. 1, paragraph

0019; pg. 2, paragraph 0033-0040; pg. 3, paragraph 0056 – page 4, paragraph 0064;

pg. 4, paragraph 0067-0072); and scheduling the transmission of the commands of the

command buffers by a managing object (resource manager) included in the host

computing system (pg. 1, paragraph 0019; pg. 2, paragraph 0033-0040; pg. 3,

paragraph 0056 – page 4, paragraph 0064; pg. 4, paragraph 0067-0072), wherein the

computational resources of the at least one coprocessor are simultaneously available to

a plurality of applications instantiated on the host computing system (via the resource

manager instantiating resources for the applications) (pg. 1, paragraph 0019; pg. 2,

paragraph 0033-0040; pg. 3, paragraph 0056 – page 4, paragraph 0064; pg. 4,

paragraph 0067-0072) See also pg. 7, paragraph 100.

As to claims 2, 28 and 53, GARY teaches the managed object performing the

scheduling wherein the managed object runs on the operating system (pg. 1, paragraph

19).

As to claims 3, 29 and 54, GARY teaches the managed object is notified by a

coprocessor that commands of a command buffer has finished execution (pg. 3-4,

paragraph 0060; pg. 4, paragraph 0070-0071).

As to claims 4, 30 and 55, GARY teaches queuing commands for a coprocessor

to begin executing when commands of a previous command buffer are finished (via a

dedicated queue that transports messages from the resource manager to the node) (pg.

4, paragraph 0072)

As to claims 5, 31 and 56, GARY teaches specifying a coprocessor context

switch when commands of a command buffer is submitted (via the resource manager

being responsible for dynamically instantiating DSP resources to meet allocation

requests and dynamically loading DSP code as needed) (pg. 1, paragraph 0019; see

also pg. 5, paragraph 0085 – pg. 6, paragraph 0091; pg. 6, paragraph 0096 – pg. 7,

paragraph 0098).

As to claims 6, 32 and 57, GARY teaches the managing object allows a plurality

of types of coprocessor context (via the resource manager being responsible for

dynamically instantiating DSP resources to meet allocation requests and dynamically

loading DSP code as needed thereby modifying the code / context of the DSP) (pg. 1,

paragraph 0019; see also pg. 5, paragraph 0085 – pg. 6, paragraph 0091; pg. 6,

paragraph 0096 – pg. 7, paragraph 0098)

As to claims 9, 35 and 60, GARY teaches notifying the managing object by a

coprocessor that commands of a command buffer are invalid (pg. 3-4, paragraph 0060-

0061).

As to claims 18-20, 44-46 and 69-71, GARY teaches preempting by the coprocessor upon the occurrence of an external event which is the operating system making a call to a driver object to preempt the coprocessor (via the function call of RMS_deleteNode function that deletes the node's resources and removes any message frames remaining in the node's message queue) (pg. 6, paragraph 0089-0090).

As to claims 21, 47 and 72, GARY teaches virtualizing by the managed object at least one resource of the at least one coprocessor before submission to a coprocessor (via the resource manager being responsible for dynamically instantiating DSP resources to meet allocation requests and dynamically loading DSP code as needed) (pg. 1, paragraph 0019; see also pg. 5, paragraph 0085 – pg. 6, paragraph 0091; pg. 6, paragraph 0096 – pg. 7, paragraph 0098).

As to claims 23, 49 and 74, GARY teaches using thread synchronization primitives to coordinate the scheduling and transmitting of commands (via the streams can be secure, so that a user cannot easily corrupt this data) (pg. 4, paragraph 0071) (via each dedicated node queue having a companion semaphore handle that allows DSP node functions to register a semaphore to be posted when a new message is deposited in the node's queue) (pg. 4, paragraph 0061).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 10, 17, 22, 36, 43, 48, 61, 68 and 73 are rejected under 35 U.S.C. 103(a)

as being unpatentable over GARY (U.S. Patent Application Publication 2001/0049753).

As to claims 10, 36 and 61, GARY teaches the job of the resource manager is to

dynamically create, execute and destroy signal processing nodes on the DSP wherein

messages performed on the nodes include status queries (pg. 2, paragraph 0033). It is

well known to one of ordinary skill in the art that when entities do not respond to status

queries they are destroyed. For instance when a still alive message or heartbeat

message is not received, the entity is dead and typically destroyed. Therefore, it would

be obvious to one of ordinary skill in the art at the time of the invention that based on a

status query from the host processor, absent of a response, would allow the host

processor to destroy the signal processing nodes on the DSP.

As to claims 17, 43 and 68, GARY teaches the at least one coprocessor can be

any type of processing unit (via the coprocessor is exemplary only) (pg. 7, paragraph

0100). Official Notice is taken in that a graphical processing unit is a well known co

processor and therefore would be obvious in view of the teachings of GARY to control

graphic processing.

As to claims 22, 48 and 73, GARY does not explicitly detail that memory is a DSP resource. However it is well known in the art that memory is a well known DSP resource and therefore would be obvious in view of GARY in order to managing the memory of a plurality of DSP's.

Allowable Subject Matter

8.   Claims 7, 8, 11-16, 33, 34, 37-42, 58, 59 and 62-67 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9.   Applicant's arguments with respect to claims 1-23, 27-49 and 52-74 have been considered but are moot in view of the new ground(s) of rejection.
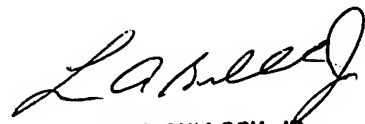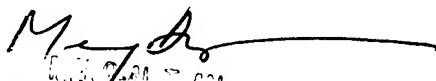
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (571) 272-3759. The examiner can normally be reached on Monday-Friday, 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng An can be reached on (571) 272-3756. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 21, 2006

LEWIS A. BULLOCK, JR.
PRIMARY EXAMINER

SUPERVISORY PATENT EXAMINER